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2-12-09  
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## COLORADO LESSER PRAIRIE-CHICKEN BREEDING SURVEY 2008

Trent Verquer - Colorado Division of Wildlife  
June 2008

Starting on March 25, 2008 and continuing through early May 2008 surveys were conducted to determine breeding abundance of Lesser Prairie Chickens (*Tympanuchus pallidicinctus*) in Colorado. A new methodology was used in 2008. A dual-frame sampling design was employed, consisting of a list frame and an area frame. The list frame consisted of known lek locations that have been active at least once within the past 10 years. The area frame consisted of areas of unknown occupancy within the potential range of lesser prairie chickens (LPC) in southeast Colorado. Opportunistic searches were conducted as time permitted, usually based on reports from the public on LPC sightings, or in Conservation Reserve Program (CRP) grasslands outside the area frame. The Colorado Division of Wildlife hired three seasonal employees to assist with this effort. Volunteers and agency personnel from CDOW, NRCS and the USFS Comanche National Grasslands assisted with efforts in Baca County.

### Methods

The sampling unit used in the dual-frame sampling process this year was a quarter section block (160 acres, .5 mile by .5 mile). The list frame consisted of all known LPC leks that have been active at least once within the past ten years. This was a total of 92 leks (83 quarter sections, some quarter sections had greater than one known lek). All surveys were completed beginning 30 minutes prior to local sunrise and no later than 2 hours after sunrise. An attempt was made to visit the quarter section containing a lek at least twice during the sampling period. A surveyor listened from at least two points on different sides of the quarter section block for five minutes. If chickens were detected, a lek count of total males, total females, and total unknown was completed.

The area frame consisted of all quarter sections in the potential range without a known lek. The area frame was determined by a Generalized Random Tessellation Stratified (GRTS) sample of 50 clusters of 4 quarter sections located 1 mile apart for efficiency. A surveyor would listen from 2 points on different sides of the quarter section. The surveyor would listen for five minutes at each point and record if birds were detected from every point. If detected, the surveyor would attempt to locate the lek and complete a count. An attempt was made to visit each quarter section at least twice.

### Results

Total LPC detected for 2008 was 116 birds with high-count totals of 67 males, 12 females, and 37 un-classified LPC. Birds whose sex was unknown were added into the high-count total, but were not used to calculate means for high male and female counts. Total number of active leks found in 2008 was 17, with 9 in Baca County, 1 in Cheyenne County, and 7 in Prowers County. No active leks were counted in Kiowa County this year, however birds were detected at one of the leks but access to the private ground was revoked prior to counts being completed. The majority of the locations on the list frame were checked in 2008. Access was denied to 2 leks in Cheyenne County and one lek in Kiowa County. USFS personnel found 2 leks active in 2008 that had not been active for at least 10 years and were not in the list frame. Three new leks were located in Prowers

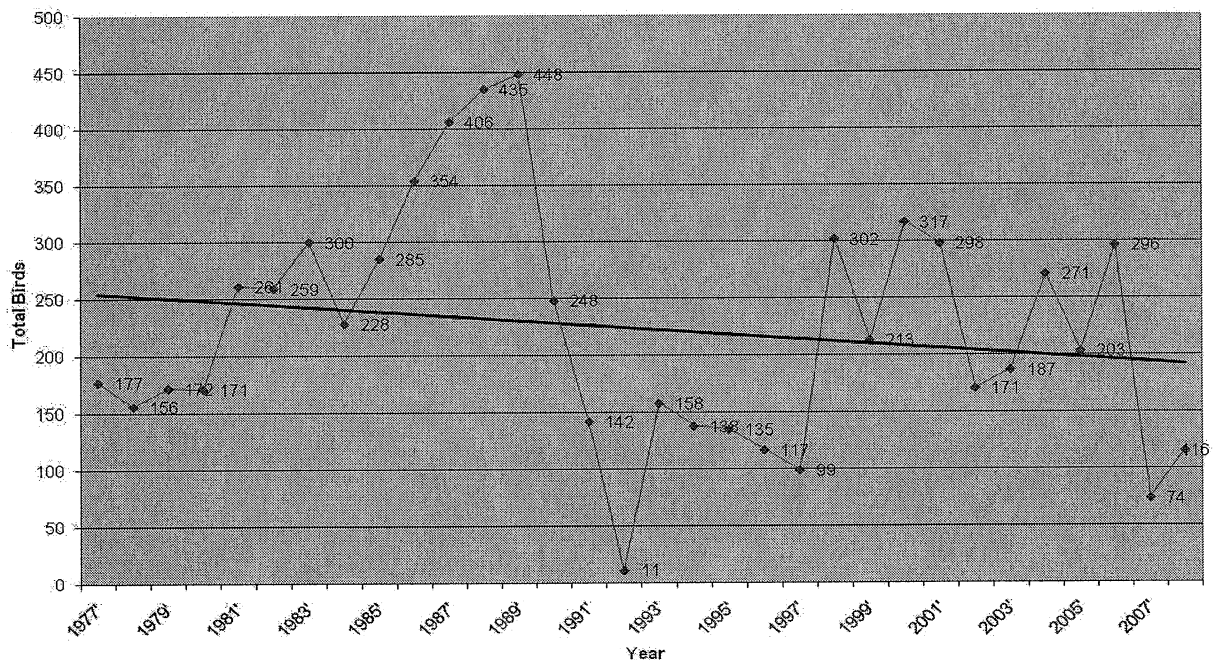
County in 2008. All three were the result of opportunistic sampling. All were located in CRP, and 2 of the leks are the first documented north of Holly in eastern Prowers County. One likely is a satellite lek near existing active leks. The vast majority of the area frame quarter sections were visited. We had limited access issues and access was denied to a handful of quarter sections, primarily in Kiowa and Cheyenne County. For the first time in a number of years, there was adequate survey effort on private lands south of the Cimarron River in Baca County. A special thank you goes to DWM Jonathan Reitz and the landowners in this area for their efforts in allowing access to survey this area in 2008. No new leks were located with the area frame sampling. However, birds were detected on known leks in the list frame from adjacent area frame surveys in Baca County and there was a possible detection in Kiowa County- it was a fairly windy day and the surveyor was unsure if they were really LPC and could not locate any birds. Subsequent searches failed to detect birds at that location. Of interest, one prairie chicken was observed by terrestrial biologist Trent Verquer foraging along Hwy 59 north of Kit Carson. This is outside the known range of LPC in Colorado. Searches by wildlife conservation biologist Casey Cooley in this area failed to turn up additional birds or any leks.

The estimated number of leks statewide from the occupancy analysis was 21 (SE=8, 95% confidence interval=(10-44)). There were 9 plots on which lesser prairie chickens were detected at least once, and the detection probability was 0.50. The probability that an active lek had birds on it when sampled was 0.69.

YEAR	MALES	FEMALES	UNKNOWN	TOTAL	ACTIVE LEKS
2007	42	8	24	74	18
2008	67	12	37	116	17

Comparison Table, lek counts

Colorado LPC Lek Survey



**Table 1. Lesser Prairie Chicken Lek Count Data - Baca County, 2008**

n Active leks	Lek Name	n Counts	High Count				Dates Checked in 2008
			Male	Female	Unknown	Total	
1	BA-02	2	0	0	0	0	4/7, 4/8
	BA-03	2	0	0	0	0	4/9, 4/21
	BA-04	3	3	1	0	4	4/9, 4/14, 4/21
2	BA-05	2	4	0	0	4	4/7, 4/10
3	BA-06	2	0	0	0	0	4/9, 4/10
	BA-07/74	3	1	0	0	1	4/8, 4/9, 4/10
	BA-08	2	0	0	0	0	4/8, 4/9
5	BA-14	2	0	0	0	0	4/8, 4/9
	BA-17	2	0	0	0	0	4/10, 4/16
	BA-18	2	0	0	0	0	4/9, 4/10
6	BA-23	2	0	0	0	0	4/4, 4/21
	BA-25	2	0	0	0	0	4/10, 4/16
	BA-27	2	3	0	7	10	4/8, 4/9
7	BA-28	3	4	0	2	6	4/9, 4/10, 4/22
	BA-30	2	0	0	0	0	4/4, 4/25
	BA-31	3	0	0	0	0	4/21, 4/22, 4/26
8	BA-32	2	0	0	0	0	4/8, 4/9
	BA-35	3	0	0	0	0	4/22, 4/24, 4/26
	BA-37	3	5	0	3	8	4/4, 4/21, 4/25
9	BA-38	2	0	0	0	0	4/8, 4/9
	BA-39/33/73	2	0	0	0	0	4/9, 4/10
	BA-40/70/75	2	2	0	3	5	4/8, 4/9
10	BA-42	2	0	0	0	0	4/24, 4/26
	*BA-48	1	2	0	0	2	4/10/2008
	BA-50	2	0	0	0	0	4/10, 4/22
10	BA-55	2	0	0	0	0	4/9, 4/10
	*BA-61	2	2	0	0	2	4/8, 4/10
	BA-62	4	0	0	0	0	4/7, 4/10, 4/15, 4/16
10	BA-64	2	0	0	0	0	4/24, 4/26
	BA-68	2	0	0	0	0	4/10, 4/16
	BA-76	2	0	0	0	0	4/9, 4/10
10	BA-77	2	0	0	0	0	4/8, 4/9
	BA-78	2	0	0	0	0	4/7, 4/10
	BA-79	2	0	0	0	0	4/7, 4/10
10	BA-80	3	0	0	0	0	4/10, 4/22, 4/24
	BA-82	2	0	0	0	0	4/10, 4/16
<b>Totals</b>		<b>59</b>	<b>26</b>	<b>1</b>	<b>15</b>	<b>42</b>	
<b>Means</b>		<b>2.2</b>	<b>1.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.6</b>	
County Total Birds							42

\*BA-48 & 61 had not been active for at least 10 years prior to 2008

**Table 2. Lesser Prairie Chicken Lek Count Data - Cheyenne County, 2008**

n Active leks	Lek Name	n Counts	High Count				Dates Checked in 2008
			Male	Female	Unknown	Total	
1	CH-1	0	0	0	0	0	Access Denied
	CH-2	0	0	0	0	0	Access Denied
	*CH-3	1	0	0	0	0	3/31/2008
	CH-4	2	0	0	0	0	4/14, 4/29
	CH-5	4	5	3	2	10	4/8, 4/12, 4/30, 5/12
	CH-6	3	0	0	0	0	4/15, 4/23, 5/6
	**CH-7	2	0	0	0	0	4/15, 5/6
<b>Totals</b>		<b>4</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>10</b>	
<b>Means</b>		<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	
<b>County Total Birds</b>							<b>10</b>

Note: One prairie chicken observed by Trent Verquer along Hwy 59 approx. 8 miles north of Kit Carson  
This bird was outside the known range of LPC in CO

\* access denied after lek checked once on 3/31/08. Birds heard but not located on this date.

\*\* utms are not at lek- when lek first was located, access could not be gained to location of lek.

The lek was located approx. 3/4 -1 mi s/sw from UTM location but could easily be heard and some birds could be observed flutter-jumping

**Table 3. Lesser Prairie Chicken Lek Count Data - Kiowa County, 2008**

n Active leks	Lek Name	n Counts	High Count				Dates Checked in 2008
			Male	Female	Unknown	Total	
	KI-1	4	0	0	0	0	4/3, 4/4, 4/18, 5/3
	KI-2	5	0	0	0	0	4/2, 4/4, 4/18, 4/27, 5/3
	KI-3	2	0	0	0	0	4/18, 5/3
	KI-4	2	0	0	0	0	4/14, 5/3
	KI-5		0	0	0	0	access denied
	KI-6	3	0	0	0	0	4/7, 4/29, 5/5
	KI-7	2	0	0	0	0	4/14, 4/27
	KI-8	3	0	0	0	0	4/17, 4/24, 5/5
	KI-9	2	0	0	0	0	4/14, 4/27
	KI-10	2	0	0	0	0	4/19, 5/10
	KI-11	3	0	0	0	0	4/7, 4/24, 5/5
	KI-12	3	0	0	0	0	4/7, 4/24, 5/6
<b>Totals</b>		<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Means</b>		<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>County Total Birds</b>							<b>0</b>

Note: NO Active leks located in Kiowa County in 2008

**Table 4. Lesser Prairie Chicken Lek Count Data - Prowers County, 2008**

n Active leks	Lek Name	n Counts	High Count				Dates Checked in 2008
			Male	Female	Unknown	Total	
1	PR-01	3	0	0	0	0	4/2, 4/15, 4/18
	PR-02	2	0	0	0	0	4/15, 4/18
	PR-03	3	0	0	0	0	4/13, 4/15, 4/18
	PR-04	2	0	0	0	0	4/15, 4/18
	PR-05	2	0	0	0	0	3/25, 4/14
	PR-06	2	0	0	0	0	4/12, 4/13
	PR-07	1	0	0	0	0	4/13,
	PR-08	3	0	0	0	0	4/2, 4/8, 4/15
	PR-09	2	0	0	0	0	3/28, 4/2
	PR-10	2	0	0	0	0	4/2, 4/15
	PR-11	2	0	0	0	0	3/25, 4/23
	PR-12	2	0	0	0	0	3/25, 4/23
	PR-13	2	0	0	0	0	3/25, 4/24
	PR-14	2	0	0	0	0	3/25, 4/23
	PR-15	0	0	0	0	0	Not Surveyed
	PR-16	4	0	0	0	0	3/27, 3/28, 4/12, 4/15
	PR-17	2	0	0	0	0	4/15, 4/18
	PR-18	2	0	0	0	0	4/12, 4/15
	PR-19	2	0	0	0	0	4/12, 4/16
	PR-20	2	0	0	0	0	4/2, 4/15
	PR-21	5	0	0	0	0	3/27, 3/29, 4/8, 4/13, 4/30
	PR-22	1	0	0	0	0	3/26,
	PR-23	5	0	0	10	10	3/27, 3/31, 4/4, 4/5, 4/19
	PR-24	2	0	0	0	0	3/26, 4/13
	PR-25	2	0	0	0	0	4/19, 4/29
	PR-26	3	0	0	0	0	3/26, 4/5, 4/7
	PR-27	5	0	0	0	0	3/27, 3/31, 4/4, 4/5, 4/30
	PR-28	2	0	0	0	0	4/7, 4/21
	PR-29	3	14	3	0	17	3/25, 3/26, 4/1
	PR-30	4	0	0	0	0	3/27, 3/28, 4/2, 4/15
	PR-31	2	0	0	0	0	3/25, 4/14
	PR-32	2	1	1	1	3	3/27, 4/8
	PR-33	3	0	0	0	0	3/25, 4/8, 4/14
	PR-34	2	0	0	0	0	3/28, 4/14
	PR-35	1	0	0	0	0	4/8,
	PR-36	3	0	0	9	9	3/25, 3/26, 4/1,
	*PR-37	2	5	1	0	6	4/14, 4/19
	*PR-38	2	12	2	0	14	4/14, 4/20
	*PR-39	2	4	1	0	5	4/1, 4/11
<b>Totals</b>		<b>93</b>	<b>36</b>	<b>8</b>	<b>20</b>	<b>64</b>	
<b>Means</b>		<b>4.7</b>	<b>1.8</b>	<b>0.4</b>	<b>1.0</b>	<b>3.2</b>	
<b>County Total Birds</b>							<b>64</b>

\* New in 2008. All found via opportunistic sampling, not on standardized area or list frame sampling

### **Discussion**

Total number of LPC counted in 2008 was up from 2007. Nesting and brood rearing conditions were generally good due to adequate soil moisture and plant response following the 2006/07 blizzards. Spring and early summer 2008 nesting and brood rearing conditions were not favorable for good reproduction, with drought conditions prevalent in the lesser prairie chicken range in southeast Colorado.

### **Summary**

Similar to the past several years, Prowers County has had the highest number of LPC observed in Colorado; however Baca County had the highest number of active leks in 2008. It is troubling that in Kiowa County no birds have been detected since the blizzard in the area east of the town of Eads. Prior to this, at least one lek had been active for at least 10 years. It appears CRP continues to be important to LPC in Prowers County as all active leks in the county were located in CRP in 2008. This effort would not be possible without the help and support of the many private landowners who allowed access for the surveys this spring. I would like to sincerely thank each and every one of you. Your contributions are greatly appreciated.

I would also like to thank the numerous volunteers, Baca County Conservation District personnel, Comanche National Grasslands personnel, Fred Dorenkamp, Ron Idler, Walt Immer, and all the CDOW folks who contributed to this year's survey. Thank You!